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What is claimed is:

1. A micropump comprising:

a pump structural material having a reaction chamber formed therein;

5 a reaction agent which is housed in said reaction chamber and produces a gas of predetermined pressure;

reaction initiation means which is disposed beside said reaction agent and causes said reaction agent to produce a gas; and

10 a channel which is provided in said pump structural material and guides said gas of predetermined pressure produced by said reaction agent to an outlet from said reaction chamber, wherein said pump structural material and said reaction initiation means are stacked one on top of the other.

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2. The micropump according to claim 1,

wherein said pump structural material is formed by stacking a first structural material and a second structural material one on top of the other; an indentation section is
20 formed in at least either the first or second structural material; and said first and second structural materials are stacked so as to oppose each other, thereby constituting said reaction chamber.

25 3. The micropump according to claim 1,

wherein said pump structural material is formed by stacking said structural material, a second structural material, a first intermediate structural material, and a second intermediate structural material; an opening to be used for attachment of at least said reaction agent is formed in said first intermediate structural material; and at least an opening which is to serve as said channel is formed in said second intermediate structural material.

4. The micropump according to claim 1, wherein said pump structural material is formed by stacking said structural material and a second structural material one on top of the other, and said reaction initiation means is provided within said indentation section of said first structural material.

5. The micropump according to claim 2, wherein, when said reaction agent is liquid, and said reaction agent is housed in a first indentation section of said first structural material and covered with a sheet material.

6. The micropump according to claim 5, wherein, when the reaction agent is formed from first and second liquids, said first and second liquids are housed in said first indentation section in a separated state; and said reaction initiation means

releases said first and second liquids from a separated state,
to thereby cause said liquids to react with each other.

7. The micropump according to any one of claims 1 through
5 6, wherein, when said reaction agent is liquid, said reaction
agent is housed in a microcapsule, and said microcapsule is
loaded in said reaction chamber.

8. The micropump according to any one of claims 1 through
10 6, wherein, when said reaction agent is formed from first and
second liquids, said first liquid is housed in a microcapsule
and dispersed in said second liquid.

9. The micropump according to any one of claims 1 through
15 6, wherein, when said reaction agent is formed from said first
and second liquids, said first liquid is housed in a first
microcapsule, and said first microcapsule is encapsulated in
a second microcapsule along with said second liquid.

20 10. The micropump according to any one of claims 1 through
6, wherein, when said reaction agent is formed from first and
second liquids, said first liquid and said second liquid are
mixed together while said first liquid is encapsulated in a
first microcapsule and second liquid is housed in a second
25 microcapsule.

11. The micropump according to any one of claims 1 through 4, wherein, when said reaction agent is formed from a liquid and a solid, said liquid is housed in a microcapsule and dispersed in said solid.

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12. The micropump according to any one of claims 1 through 11, wherein a gas derived from reaction of said reaction agent is an inactive gas.

10 13. The micropump according to any one of claims 1 through 11, wherein said reaction agent is a noncontaminating chemical.

14. The micropump according to any one of claims 1 through 13, wherein said reaction agent is formed from a plurality of
15 small reaction agents.

15. A micropump which is stacked on reaction initiation means and produces a predetermined gas in a reaction chamber by means of actuation of said reaction initiation means, said micropump
20 comprising: a pump structural material having said reaction chamber; a reaction agent which is housed in said reaction chamber and produces a gas; and a channel which is provided in said structural material and guides a gas produced by said reaction agent from said reaction chamber to an outlet port.

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16. A micropump comprising: a pump structural material having a reaction chamber formed therein; a reaction agent which is housed in said reaction chamber and produces a gas of predetermined pressure; a reaction initiation section for causing said reaction agent to produce a gas; a channel which is provided in said pump structural material and guides said gas of predetermined pressure produced by said reaction agent to an outlet from said reaction chamber; and a control section for controlling operation of said reaction initiation section, reacted gas being supplied to another chip when said pump structural material is combined with said other chip, said micropump comprising:

recognition means for outputting a match signal only when a match exists between said pump structural material and the other chip in terms of position and/or combination.

17. The micropump according to claim 16, wherein said control section cancels stoppage of operation of said reaction initiation section when said match signal detected by said recognition means is delivered to said control section.

18. The micropump according to claim 16 or 17, wherein said recognition means is constituted of an electrode which is provided on the surface of said pump structural material and is provided with a predetermined voltage and produces a match

signal when coming into contact with an electrode provided on said other chip.

19. A micropump comprising: a pump structural material having
5 a reaction chamber formed therein; a reaction agent which is
housed in said reaction chamber and produces a gas of
predetermined pressure; a reaction initiation section for
causing said reaction agent to produce a gas; a channel which
is provided in said pump structural material and guides said
10 gas of predetermined pressure produced by said reaction agent
to an outlet from said reaction chamber; and a control section
for controlling operation of said reaction initiation section,
reacted gas being supplied to another chip when said pump
structural material is combined with said other chip, said
15 micropump comprising:

an optical recognition mark provided on said pump
structural material and/or the other chip; and

identification means for performing recognition of a chip
and/or identification of a combination by means of said optical
20 recognition mark.

20. The micropump according to claim 19, comprising a
physical recognition mark, or an electrical recognition mark
in place of said optical recognition mark.

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21. The micropump according to claim 19 or 20, wherein at least one of said identification means and said control section is removably attachable.

5 22. A sample processing chip comprising:

a micropump including a pump structural material having a reaction chamber formed therein, a reaction agent which is housed in said reaction chamber and produces a gas of predetermined pressure, a reaction initiation section for causing said reaction agent to produce a gas, a channel which is provided in said pump structural material and guides said gas of predetermined pressure produced by said reaction agent to an outlet from said reaction chamber, and a control section for controlling operation of said reaction initiation section, reacted gas being supplied to another chip when said pump structural material is combined with said other chip;

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a flow passage control chip, which guides a gas ejected from said micropump from a gas inlet port to a reservoir when used in combination with said micropump, shifts a sample filled in said reservoir, and controls a flow passage at this time; and

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a processing chip for processing a sample supplied from said flow passage control chip, wherein said control section controls a flow passage and/or processing of a sample.

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23. The sample processing chip according to claim 22, wherein said flow passage control chip and said processing chip are assembled in a single piece.

5 24. The sample processing chip according to claim 22, wherein said micropump and said flow passage control chip are assembled in a single piece.

25. The sample processing chip according to claim 22, wherein
10 said micropump, said flow passage control chip, and said processing chip are assembled in a single piece.

26. A micropump including a pump structural material having a reaction chamber formed therein; a reaction agent which is
15 housed in said reaction chamber and produces a gas of predetermined pressure; a reaction initiation section which is provided beside said reaction agent and causes said reaction agent to produce a gas; a channel which is provided in said pump structural material and guides said gas of predetermined
20 pressure produced by said reaction agent to an outlet from said reaction chamber; and a control section for controlling operation of said reaction initiation section, wherein in said micropump:

said channel or said reaction chamber is provided with
25 detection means for detecting the pressure or flow rate of a

gas; a signal detected by said detection means is sent to said control section; and said control section controls said reaction initiation section in accordance with said signal such that a pressure or flow rate approaches a predetermined target level.

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27. The micropump according to claim 26, wherein said detection means is a pressure sensor for detecting the pressure of a gas, or a flow sensor for detecting a flow rate of a gas.

10 28. The micropump according to claim 26 or 27, wherein at least one of said detection means and said control section is removably attachable.

29. The micropump according to any one of claims 26 to 28,
15 further comprising a storage section for storing control data, wherein said control section controls said reaction initiation section in accordance with said control data.

30. micropump including a pump structural material having
20 a reaction chamber formed therein; a reaction agent which is housed in said reaction chamber and produces a gas of predetermined pressure; a reaction initiation section which is disposed beside said reaction agent and causes said reaction agent to produce a gas; a channel which is provided in said
25 pump structural material and guides said gas of predetermined

pressure produced by said reaction agent to an outlet from said reaction chamber; and a control section for controlling operation of said reaction initiation section, said micropump comprising:

- 5 a storage section for storing control data, wherein said control section controls said reaction initiation section in accordance with said control data.

31. The micropump according to claim 29 or 30, wherein said
10 control section performs control operation by means of at least power supplied to said reaction initiation section or a supply time of said power.

32. The micropump according to any one of claims 26 to 28,
15 wherein at least one of said reaction agent and said reaction initiation section is constituted of a small reaction agent or a small reaction initiation section.

33. The micropump according to any one of claims 26 to 28,
20 wherein said pump structural material is provided with at least one or more memory input element means and a memory IC which receives an ON signal from said memory input element means through use of respective small reaction agents.

25 34. The micropump according to claim 33, wherein said memory

input element means is a resistor which is provided beside said reaction agent and breaks a line by means of the heat derived from reaction of said reaction agent.

5 35. The micropump according to claim 33, wherein said reaction initiation section is heating means for heating said reaction agent; and said input element means is a resistor which is disposed beside said reaction agent and breaks a line by means of the heat applied from said reaction initiation section.

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36. The micropump according to claim 33, wherein said memory input element means is constituted of said reaction agent and an electrode; energization potential, a resistance value, or a dielectric constant is detected by said electrode; and an
15 ON signal issued when the detected energization potential, resistance value, or dielectric constant has exceeded a threshold value is input to said memory IC.

37. The micropump according to claim 33, wherein said memory
20 IC is provided on said pump structural material and outputs used/unused information about said reaction agent when connected to said control section.

38. The micropump according to any one of claims 26 to 37,
25 wherein a flow passage through which a gas produced from said

reaction agent is provided with a gas permeable film which permits passage of a gas from said flow passage when the pressure of the gas flowing through said chamber or the inside of said channel has increased.

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39. The micropump according to any one of claims 26 to 28, wherein a constant pressure chamber is provided in the flow passage through which the gas produced from said reaction agent flows, for inhibiting a sharp hike in the pressure of said gas flowing through said chamber or the inside of said channel.

40. A sample processing chip comprising: said micropump defined in any one of claims 26 to 39; said flow passage control chip which is stacked on said micropump, supplies a sample by means of a gas ejected from said micropump, and controls a flow passage at this time; and a processing chip for processing a sample supplied from said flow passage control chip, wherein said control section controls a flow passage and/or processing of a sample.

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41. The sample processing chip according to claim 14 having the micropump defined in claim 29 or 30, wherein said processing chip is provided with detection means for detecting a processing state of a sample; and wherein said control section interrupts control of said reaction initiation section when said processing

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state is beyond a predetermined extent.

42. The sample processing chip according to claim 40 or 41,
wherein at least one of said flow passage control chip and said
5 processing chip is provided with detection means for detecting
a flowing state of said sample and/or the pressure of said sample
and/or the pressure of a gas produced from said reaction agent;
and said control section controls said reaction initiation
section in accordance with a signal detected by said detection
10 means.

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